

REMARKS/ARGUMENTS**1. Regarding the Office Action, dated 12/19/2005:**

Claims 1, 2, and 6-9 are rejected under 35 U.S.C 102(e) as being anticipated by Nozoe et al. (US Pat. 6777677 B2). Claims 3-5 are rejected under 35 U.S.C 103(a) as being anticipated by Nozoe et al. (US Pat. 6777677 B2) in view of Moore et al. (US Pat. 6777674 B2).

Response:

Claims 1-9 are amended to overcome the objections set forth on the following detailed Office action, emphasize the characteristics of the claimed invention, and in the interests of clarity is reproduced above in toto.

According to the amended claim 1, a method of defect root cause analysis is disclosed, in which the defect root cause analysis includes the steps of: providing a sample which comprises a plurality of defects; performing a defect inspection to detect sizes and locations of the plurality of defects; performing a chemical state analysis of the sample; performing a mapping analysis according to a result of the chemical state analysis; and analyzing the root cause of the defects according to the result of the mapping analysis. Preferably, the mapping analysis includes the steps of forming a plurality of defects into a defect pattern, and combining the defect pattern with a predetermined pattern on the sample. After the defect pattern and the predetermined pattern are combined, the combination of the two patterns is analyzed thereafter to determine the root cause of the defects.

According to the amended claim 7, another method of defect root cause analysis is disclosed. Similarly, the defect root cause analysis includes the steps of: providing a sample with a plurality of defects; performing a voltage contrast to identify locations of the defects; cutting the sample with a focus ion beam (FIB) to expose a cross-section of the sample; utilizing auger electrons to perform a chemical state

analysis of the cross-section of the sample; performing a mapping analysis according to a result of the chemical state analysis; and judging a root cause of the defect generation according to the result of the mapping analysis. The mapping analysis also includes the steps of forming a plurality of defects into a defect pattern, and
5 combining the defect pattern with a predetermined pattern on the sample. After the defect pattern and the predetermined pattern are combined, the combination of the two patterns is analyzed thereafter to determine the root cause of the defects.

In contrast to the claimed invention, the mapping process taught by Nozoe et al
10 primarily involves the steps of using an inspection system to find the location of the defect, using an analysis system to perform an analysis regarding the composition of the defect, and tracing the root cause of the defect. In other words, Nozoe et al never teaches a mapping analysis of first forming a plurality of defects into a defect pattern on a wafer, and then combining the defect pattern with a predetermined pattern on the
15 wafer, and therefore fails to disclose a defect root cause analysis as the one taught by the claimed invention. Reconsideration of the amended claims 1-9 is therefore politely requested.

20 Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Sincerely yours,

Winston Hsu

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